

# Marine Technologies, Inc.

PROVIDING WORLDWIDE SERVICES



## STORM DRAIN INSPECTION

**ANNAPOLIS HARBOR  
ANNAPOLIS, MARYLAND**



**JUNE 5, 2013**

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## **SECTION 1**

### **STRUCTURAL DATA**

## SECTION 1

### MARINE TECHNOLOGIES, INC. UNDERWATER INSPECTION REPORT

Date of this Inspection: 6/5/2013

#### STRUCTURAL DATA:

Structure No: N/A Year Built: Unknown

Route No: N/A Length: N/A

Structure Type: Storm Drain Pipes Date of Previous Inspection: Unknown

By: \_\_\_\_\_

OVERALL CONDITION: Good

WORK PERFORMED: Inspection and measurements of storm drain pipes

#### SUMMARY:

Number of Substructure Units in Water: \_\_\_\_\_ Abutments: N/A Piers N/A

Type of Underwater Inspection: Visual with Video

Underwater Inspection Equipment Used: Miss Miranda, 2-diver station, K-Air,  
Pressure washer, U/W video unit

Substructure Elements Cleaned: Yes

Water Flow Velocity: 0 U/W Visibility: 4"

Max Diving Depth: 10' Diving Mode: Surface

Diving Hazard Analysis/Assessment: See Attached

Dive Team Members: Steve Meyerer, Alex Paul, Christian Clifton

Number of Onsite Workdays: One (1)

## **SECTION 2**

### **INSPECTION FINDINGS**

## SECTION 2

### INSPECTION FINDINGS

Structure No: N/A Storm Drain Pipes

Owner: City of Annapolis Inspection Date: 6/5/2013

COMPONENT / MATERIAL	GENERAL REMARKS
Storm Drain  Pipe #1	1) Concrete pipe  2) Round pipe  3) 14-3/4" inside diameter pipe
Storm Drain  Pipe #2	1) Concrete pipe  2) Round pipe  3) 14-3/4" inside diameter pipe
Storm Drain  Pipe #3	1) Buried - Unable to locate
Storm Drain  Pipe #4	1) Pipe is either rotted away or buried under sand. All diver found was an open hole that is deteriorated concrete with exposed rebar and leads into a vault that is 6' L x 8' W x 7' H.
Storm Drain  Pipe #5	1) Cast pipe  2) Round pipe  3) 27-5/8" inside diameter pipe

**SECTION 2**  
**INSPECTION FINDINGS**

Structure No: N/A

Storm Drain Pipes

Owner: City of Annapolis

Inspection Date: 6/5/2013

COMPONENT / MATERIAL	GENERAL REMARKS
Storm Drain  Pipe #6	1) Cast pipe  2) Round pipe  3) 28" inside diameter pipe
Storm Drain  Pipe #7	1) Concrete pipe  2) Round pipe  3) 24" inside diameter pipe
Storm Drain  Pipe #8	1) Steel pipe  2) Round pipe  3) 15-3/4" inside diameter pipe
Storm Drain  Pipe #9	1) Concrete pipe  2) Round pipe  3) 47" inside diameter pipe

## **SECTION 3**

### **FIELD NOTES**



**SECTION 3**  
**MARINE TECHNOLOGIES, INC.**  
**UNDERWATER DIVING INSPECTION**  
**(FIELD NOTES)**

**Project Title:** Storm Drain Pipe Inspection

**Owner/Company** City of Annapolis

**Date Inspection Started:** 6/5/2013 6/5/2013

**Project Manager:** Terry Clarke

**Dive Team:** Steve Meyerer, Alex Paul, Christian Clifton

**Temperature:** 80° **Weather:** Sunny

**Equipment Used:** Miss Miranda, 2-Diver station, K-Air, Pressure Washer, U/W Video Unit

**RATINGS:**

- N Not Applicable
- 9 Excellent Condition
- 8 Very Good Condition - no problems noted
- 7 Good Condition - some minor problems
- 6 Satisfactory Condition - some minor deterioration of structural elements
- 5 Fair Condition - minor section loss of primary structural elements
- 4 Poor Condition - advance section loss of primary structural elements
- 3 Serious Condition - seriously deteriorated primary structural elements
- 2 Critical Condition - facility should be closed until repairs are made
- 1 Imminent Failure Condition - facility closed. Study of repairs is feasible
- 0 Failed Condition - facility is closed and beyond repair

**GENERAL:**

**Type of Structure:** Storm Drain Pipes

**Type of Substructure:** N/A

**No. of Lanes:** On N/A Under N/A

**Number of substructure units in water:** Abutments: N/A Piers N/A

**Overall condition of substructure:** GOOD

**WATERWAY:**

**Type:** Annapolis Harbor **Velocity:** 0

**U/W Visibility:** 4" **Tide Elevation:** MLW

### SECTION 3

### UNDERWATER DIVING INSPECTION

(FIELD NOTES)

#### SUBSTRUCTURE

Condition Rating: 7

Direction: \_\_\_\_\_

RATING	COMPONENT	REMARKS
7	STORM DRAIN Pipe #1	1) Concrete round pipe 2) 14-3/4" inside diameter pipe 3) Pipe is located on south wall 1' down from mean low water and is in good condition 4) Pipe comes out of steel sheet wall in good condition
7	STORM DRAIN Pipe #2	1) Concrete round pipe 2) 14-3/4" inside diameter 3) Pipe is located on south wall 1' down from mean low water and is in good condition 4) Pipe comes out of steel sheet wall in good condition
N/A	STORM DRAIN Pipe #3	1) Unable to locate - buried under sand
N/A	STORM DRAIN Pipe #4	1) Could not locate pipe 2) Did locate an opening into a 6'L x 8'W x 7' H vault on the southeast corner See Attached Drawing
7	STORM DRAIN Pipe #5	1) Cast iron pipe round 2) 27-5/8" inside diameter 3) Pipe is located on northeast corner and is 1' above mud line 4) Pipe comes out of timber sheet wall in good condition

Additional Remarks: All pipes are in good condition

### SECTION 3

### UNDERWATER DIVING INSPECTION

(FIELD NOTES)

### SUBSTRUCTURE

Condition Rating: 7

Direction: \_\_\_\_\_

RATING	COMPONENT	REMARKS
7	STORM DRAIN  Pipe #6	1) Cast iron pipe round 2) 28" inside diameter 3) Pipe is located on the north side and is 1' down from mean low water 4) Pipe comes out of timber sheet wall in good condition
7	STORM DRAIN  Pipe #7	1) Concrete round pipe 2) 24" inside diameter 3) Pipe is located in the northwest corner and is 1' down from mean low water 4) Pipe comes out of steel sheet wall in good condition
7	STORM DRAIN  Pipe #8	1) Steel pipe round 2) 15-3/4" inside diameter 3) Pipe is located right at the surface of mean low water on the north side 4) Pipe comes out of timber sheet wall in good condition
7	STORM DRAIN  Pipe #9	1) Concrete pipe round 2) 47" inside diameter 3) Pipe is located on north side 2' down from mean low water 4) Pipe comes out of timber sheet wall in good condition

Additional Remarks: All pipes are in good condition

\_\_\_\_\_  
\_\_\_\_\_

### SECTION 3

### UNDERWATER DIVING INSPECTION (FIELD NOTES)

#### SUBSTRUCTURE

Condition Rating: 7

Direction: \_\_\_\_\_

RATING	COMPONENT	REMARKS
7	Steel Sheet Wall  Timber Sheet Wall	1) Located on the south side and north side 2) South side sheet wall begins in the corner by Pipe #1 and continues south to southeast corner 3) Timber Sheet picks up from the southeast corner, goes along the east side then up the north side to just past Pipe #6 4) Past Pipe #6 Steel sheet wall begins and goes north to the corner right before Pipe #8 5) Right before Pipe #8 at the corner where steel sheet wall ends the Timber sheet wall begins and goes north to the last Pipe #9.

Additional Remarks: Both Steel sheet wall and Timber sheet wall are in good condition

\_\_\_\_\_  
\_\_\_\_\_

### SECTION 3

#### UNDERWATER DIVING INSPECTION (FIELD NOTES)

#### SUBSTRUCTURE

Condition Rating: 4

Direction: \_\_\_\_\_

RATING	COMPONENT	REMARKS
4	Drain Pipe #4  Location	<p>1) In the southeast corner of Harbor next to location of drain pipe #4, diver found no pipe, but did find an opening to a vault. The opening is deteriorated concrete with rebar exposed. The vault is 6'L x 8'W x 7'H</p> <p>2) The vault has 4 sides: the north, west, and east sides are steel sheet wall. While the east and west sides are in good condition, the north side is deteriorated where the entrance to the vault is.</p> <p>3) The south side is a concrete wall in good condition. In the middle of the wall 3' down from the top is a 35" steel round pipe in good condition. There is sand in the vault approximately 5' high on east side and slopes to 2' high on the west side.</p> <p>4) Top of vault is made of plywood. When doing pick penetration diver found anywhere from 1/4" to 1" of pick penetration.</p> <p>5) Also appears some type of steel bracing runs along the plywood which is heavily corroded.</p>

Additional Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **SECTION 4**

### **SOUNDINGS AND/OR PHOTOGRAPHS**

**SECTION 4**  
**SOUNDINGS AND/OR PHOTOGRAPHS**

Structure No: N/A

Storm Drain Pipes

Owner: City of Annapolis

Inspection Date: 6/5/2013



**PHOTO NO: 1**

**LOCATION:**

North Wall

**DESCRIPTION:**

Pipe #9



**PHOTO NO: 2**

**LOCATION:**

North Wall

**DESCRIPTION:**

Pipe #8



**SECTION 4**  
**SOUNDINGS AND/OR PHOTOGRAPHS**

Structure No: N/A

Storm Drain Pipes

Owner: City of Annapolis

Inspection Date: 6/5/2013



**PHOTO NO: 3**

**LOCATION:**

Looking East to West

**DESCRIPTION:**



**PHOTO NO: 4**

**LOCATION:**

Looking West to East

**DESCRIPTION:**



**SECTION 4**  
**SOUNDINGS AND/OR PHOTOGRAPHS**

Structure No: N/A

Storm Drain Pipes

Owner: City of Annapolis

Inspection Date: 6/5/2013



**PHOTO NO: 5**

**LOCATION:**

Looking West to East

**DESCRIPTION:**



**PHOTO NO: 6**

**LOCATION:**

Looking East to West

**DESCRIPTION:**

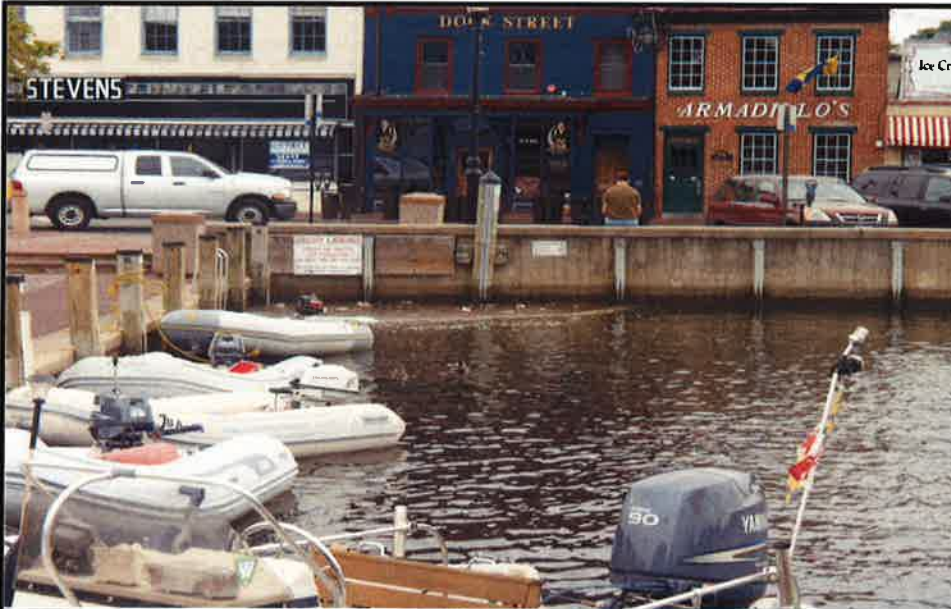
**SECTION 4**  
**SOUNDINGS AND/OR PHOTOGRAPHS**

Structure No: N/A

Storm Drain Pipes

Owner: City of Annapolis

Inspection Date: 6/5/2013



**PHOTO NO: 7**

**LOCATION:**

Looking North to South

**DESCRIPTION:**



**PHOTO NO: 8**

**LOCATION:**

Looking North to South

**DESCRIPTION:**

**SECTION 4**  
**SOUNDINGS AND/OR PHOTOGRAPHS**

Structure No: N/A

Storm Drain Pipes

Owner: City of Annapolis

Inspection Date: 6/5/2013



**PHOTO NO: 9**

**LOCATION:**

Looking North to South

**DESCRIPTION:**



**PHOTO NO: 10**

**LOCATION:**

Looking North to South

**DESCRIPTION:**

## **SECTION 5**

### **CONCLUSIONS AND RECOMMENDATIONS**



**SECTION 5**  
**CONCLUSIONS AND RECOMMENDATIONS**

Structure No: N/A Storm Drain Pipes

Owner: City of Annapolis Inspection Date: 6/5/2013

**CONCLUSIONS & RECOMMENDATIONS:**

Inspected storm drain pipes -- found them to be in good condition.

Inspected both steel sheet wall and timber sheet wall -- found both to be in good condition.

Could not locate Drain Pipe #3 because it is buried under sand.

At the Drain Pipe #4 location, diver found opening in sheet wall which led to a vault under

the walkway around the Harbor. No pipe was located and is believed to be buried in sand.

The city blew air through a manhole to help locate the pipe, but diver could not locate

any air bubbles.

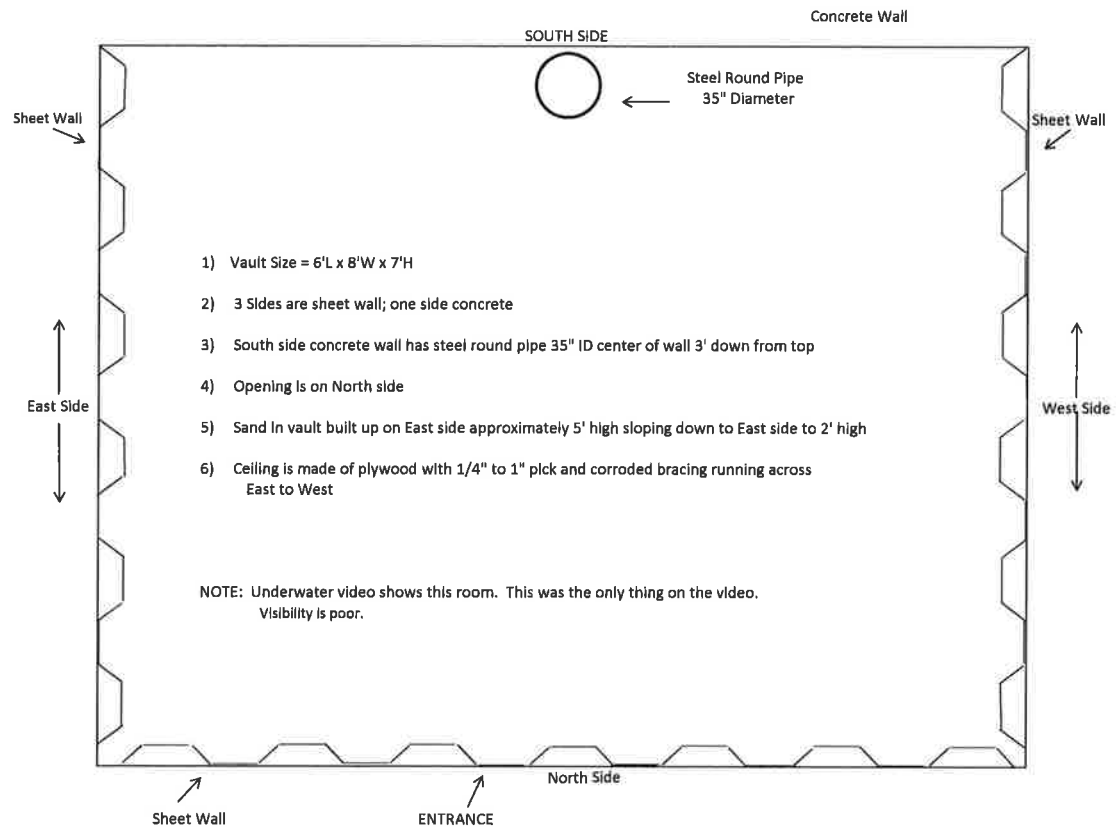
**RECOMMENDATIONS:**

There are no repair recommendations at this time.

## **SECTION 6**

### **VAULT DRAWING**

Vault by Storm Drain #4 - Looking Down



## **SECTION 7**

### **STORM DRAIN INDEX FOR AERIAL VIEWS**



## STORM DRAIN INDEX

- 1) Concrete round pipe 14-3/4" inside diameter
- 2) Concrete round pipe 14-3/4" inside diameter
- 3) Not found - buried, unable to locate
- 4) Not found - this is where vault is located
- 5) Cast iron round pipe 27-5/8" inside diameter
- 6) Cast iron round pipe 28" inside diameter
- 7) Concrete round pipe 24" inside diameter
- 8) Steel round pipe 15-3/4" inside diameter
- 9) Concrete round pipe 47" inside diameter
- 10) Steel sheet wall
- 11) Timber sheet wall
- 12) Steel sheet wall
- 13) Timber sheet wall

